

WHAT IS CLAIMED IS:

1. A display device comprising:

a back substrate formed with a plurality of electron emission elements;

a display substrate disposed opposite to said back substrate, said display substrate including an accelerating electrode applied with an accelerating voltage for accelerating electrons from said electron emission elements, and luminescent materials for emitting light when said luminescent materials come into collision with the electrons accelerated by the accelerating voltage;

a frame member for supporting said back substrate and said display substrate on the peripheries thereof, said frame member, said back substrate, and said display substrate surrounding a space to define a vacuum area; and

a conductor electrically connected to said accelerating electrode and applied with the accelerating voltage,

wherein said conductor is routed outside of said vacuum area, and includes a connection part which is removably connected to a connector for supplying the accelerating voltage.

2. A display device according to claim 1, wherein said conductor is routed on a side of said display substrate opposite to said back substrate outside of said vacuum area.

3. A display device according to claim 1, wherein said connection part includes a rod member extending in a direction orthogonal to a plane including said conductor, and said connector is removably fitted over said rod member.

4. A display device according to claim 3, wherein said connector comprises an insulating cap for covering an end of said conductor and said rod member.

5. A display device according to claim 1, wherein a distance between an end of said conductor and an end of an optically transparent substrate is in a range of 2 to 5 mm, said optically transparent substrate constituting said display substrate.

6. A display device comprising:

a back substrate including an insulating substrate, and a plurality of electron emission elements formed on said insulating substrate;

a display substrate including an optically transparent substrate disposed opposite to said back substrate, an accelerating electrode plate disposed on an inner face of said optically transparent substrate and applied with an accelerating voltage for accelerating electron beams emitted from said electron emission elements, and a luminescent material layer excited by the electron beams accelerated by the accelerating voltage to emit light to the outside of said optically transparent substrate;

a frame member for supporting said back

substrate and said display substrate on the peripheries thereof, said frame member, said back substrate, and said display substrate surrounding a space to define a vacuum chamber; and

a conductor electrically connected to said accelerating electrode plate, and drawn out to a predetermined region outside of said vacuum chamber, when viewed from a light exiting side, toward said back substrate on said optically transparent substrate,

wherein said conductor includes a connection part which is embedded between said optically transparent substrate and said frame member, and is removably connected to a connector for supplying the accelerating voltage.

7. A display device according to claim 6, wherein:

said optically transparent substrate and said insulating substrate are both substantially rectangular;

said conductor is drawn out to one longer side of said optically transparent substrate; and

said optically transparent substrate has shorter sides longer than shorter sides of said insulating substrate.

8. A display device according to claim 7, wherein:

said vacuum chamber is substantially rectangular in shape when viewed from a light exiting

side; and

a distance in a shorter side direction between one longer side of said vacuum chamber and one longer side of said optically transparent substrate sandwiching said predetermined region of said optically transparent substrate is longer than a distance in the shorter side direction between the other longer side of said vacuum chamber and the other longer side of said optically transparent substrate.

9. A display device according to claim 6, wherein:

said optically transparent substrate and said insulating substrate are both substantially rectangular;

said conductor is drawn out to one shorter side of said optically transparent substrate; and

said optically transparent substrate has longer sides longer than longer sides of said insulating substrate.

10. A display device according to claim 9, wherein:

said vacuum chamber is substantially rectangular in shape when viewed from a light exiting side; and

a distance in a longer side direction between one shorter side of said vacuum chamber and one shorter side of said optically transparent substrate sandwiching said predetermined region of said optically

transparent substrate is longer than a distance in a longer side direction between the other shorter side of said vacuum chamber and the other shorter side of said optically transparent substrate.

11. A display device according to claim 6,
wherein:

said back substrate includes a driving line for driving said electron emission elements, and an electrode area to which an electrode is drawn out for connection to said driving line; and

said conductor is routed along a side on which said electrode area is not formed.

12. A display device according to claim 6,
wherein:

said display substrate comprises a plurality of miniature holes arranged in matrix, said miniature holes containing said luminescent materials to form a light emitting area, and a metal sheet disposed on a side of said display substrate closer to said back substrate and having a plurality of recesses for vertically holding supporters;

said metal sheet is secured to an inner face of said optically transparent substrate through an adhesive layer, and said metal sheet has said accelerating electrode plate electrically connected to said metal sheet on a side of said metal sheet closer to said back substrate; and

a portion of said metal sheet is embedded

between said adhesive layer and said frame member, and integrally drawn out to said predetermined region to constitute said conductor.

13. A display device according to claim 12, wherein said metal sheet is mainly composed of Fe-Ne.

14. A display device according to claim 6, further comprising a conductive resilient body in electric contact with a high voltage terminal for supplying the accelerating voltage,

wherein said conductor includes a recess formed therein for fitting said resilient body thereinto, said resilient body being pressed in a thickness direction of said display substrate to fit said resilient body into said recess.

15. A display device comprising:

a back substrate having a plurality of electron emission elements formed thereon;

a display substrate disposed opposite to said back substrate, said display substrate comprising an accelerating electrode applied with an accelerating voltage for accelerating electrons from said electron emission elements, and luminescent materials for emitting light when said luminescent materials come into collision with the electrons accelerated by the accelerating voltage;

a frame member for supporting said back substrate and said display substrate on the peripheries thereof, said frame member, said back substrate, and

said display substrate surrounding a space to define a vacuum area; and

a conductor electrically connected to said accelerating electrode and applied with the accelerating voltage,

wherein said back substrate includes a driving wire formed for applying said electron emission elements with a signal for driving said electron emission elements, said driving wire being drawn out to one or a plurality of sides of said back substrate, and

wherein said conductor is routed along a side of said display substrate opposing a side of said back substrate to which said driving wire is not drawn out, and said conductor is drawn out to the outside of said vacuum area.

16. A display device according to claim 15, wherein said conductor includes a connection part removably connected to a connector for supplying the accelerating voltage.